

Amendments of the Claims:

A detailed listing of all claims in the application is presented below. This listing of claims will replace all prior versions, and listings, of claims in the application. All claims being currently amended are submitted with markings to indicate the changes that have been made relative to immediate prior version of the claims. The changes in any amended claim are being shown by strikethrough (for deleted matter) or underlined (for added matter).

1. (Currently Amended) A variable cam timing phaser for an internal combustion engine having at least one camshaft comprising:

a housing having an outer circumference for accepting drive force;

a rotor for connection to a camshaft coaxially located within the housing, the housing and the rotor defining at least one vane separating a plurality of chambers, at least one chamber being an advance chamber and another chamber being a retard chamber, the vane being capable of rotation to shift the relative angular position of the housing and the rotor;

a spool valve comprising a spool having a plurality of lands slidably mounted within a bore in the rotor, the spool slidable from an advance position through a holding position to a retard position[.];

an advance passage extending from the advance chamber to the spool valve;

a retard passage extending from the retard chamber to the spool valve;

an advance exhaust passage extending from the spool valve to a return passage, for routing fluid back to the advance chamber and the retard chamber through the spool valve;

a retard exhaust passage extending from the spool valve to the return passage for routing fluid back to the advance chamber and the retard chamber through the spool valve;

and having an advance exhaust passage, a retard exhaust passage, and a return passage to route operating fluid to the advance and retard chambers, wherein the advance exhaust passage and the retard exhaust passage are coupled to the return passage; and

a single recirculation check valve in the return passage allowing fluid to flow in a first direction and preventing fluid flow in an opposite direction;

a supply passage coupled to the return passage for supplying operating fluid to the advance chamber and the retard chamber through the single recirculation check valve for makeup only;

wherein the single recirculation check valve in the return passage is between the supply passage and the spool valve;

wherein when the spool is in the retard position, oriented such that flow of the operating fluid flows only from the advance chamber through the advance passage, the spool and the advance exhaust passage and into the return passage through the single recirculation check valve to the retard chamber; when the spool is in the retard position and operating

wherein when the spool is in the advance position fluid flows only from the retard chamber through the retard passage, the spool and the retard exhaust passage and into the return passage through the single recirculation check valve to the advance chamber when the spool is in the advance position.

2. (Currently Amended) The phaser of claim 1, further comprising a supply of operating fluid having a check valve in the supply passage.
3. (Cancelled)
4. (Cancelled).
5. (Cancelled).

6. (New) A variable cam timing phaser for an internal combustion engine having at least one camshaft comprising:

a housing having an outer circumference for accepting drive force;

a rotor for connection to a camshaft coaxially located within the housing, the housing and the rotor defining at least one vane separating a plurality of chambers, at least one chamber being an advance chamber and another chamber being a retard chamber, the vane being capable of rotation to shift the relative angular position of the housing and the rotor;

a spool valve comprising a spool having a plurality of lands slidably mounted within a bore in the rotor, the spool slidable from an advance position through a holding position to a retard position;

an advance passage extending from the advance chamber to the spool valve;

a retard passage extending from the retard chamber to the spool valve;

an advance exhaust passage extending from the spool valve to a return passage, for routing fluid back to the advance chamber and the retard chamber through the spool valve;

a retard exhaust passage extending from the spool valve to the return passage for routing fluid back to the advance chamber and the retard chamber through the spool valve;

a connecting passage extending from the advance passage to the retard passage coupled to supply, the connecting passage having a first inlet check valve between the supply and the advance passage and a second inlet check valve between the supply and the retard passage;

a single recirculation check valve in the return passage allowing fluid to flow in a first direction and preventing fluid flow in an opposite direction;

wherein the single recirculation check valve in the return passage is between the supply passage and the spool valve;

wherein when the spool is in the retard position, fluid flows from the advance chamber through the advance exhaust passage and into the return passage through the single recirculation check valve to the retard chamber;

wherein when the spool is in the advance position fluid flows from the retard chamber through the retard exhaust passage and into the return passage through the single recirculation check valve to the advance chamber; and

wherein when the spool is in the holding position, fluid flows from the supply, through the connecting passage and the first inlet check valve to the advance chamber and through the second inlet check valve to the retard chamber for makeup only.

7. (New) The phaser of claim 6, further comprising a supply inlet check valve between the supply and the connecting passage.